Strings

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Learn Programming with Java

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Small Quiz

https://pingo.coactum.de/434418

Strings

What are Strings?

- A sequence of characters
- Often implemented as an array of characters
- Can be a variable
- Or a literal constant

Strings in Java

- In Java Strings are Objects
- Strings are immutable
- Modifying a String will create a new one
- Use `compareTo()` instead of `==`

```java
char[] helloArray = { 'h', 'e', 'l', 'l', 'o', '.' };
String helloString = new String(helloArray);

// Does the same
String helloString1 = "hello.";
```

Usefull String Functions

```java
String str = "This is a new string";
// Get the length of the String
str.length();

// Get character at index 7 -> like []
str.charAt(7);

// Compares string str to string "Test" -> returns int
str.compareTo("Test");

// Splits the string on " " -> retruns String[]
str.split(" ");

// Returns true if str contains "is"
str.contains("is");
```

https://docs.oracle.com/en/java/javase/19/docs/api/java.base/java/lang/String.html

Format Strings

Allows us to insert values into a String and define how they should be formatted

```java
// I: 12, F: 2.400000, S: Test
String.format("I: %d, F: %f, S: %s", 12, 2.4f, "Test");

// Only print 3 decimal places -> Float: 2.456
String.format("Float: %.3f\n", 2.4555f);

// Print at least 5 characters, pad with 0 -> Int: 00023
String.format("Int: %05d\n", 23);

// Can do the same for printing
System.out.printf("Str: %s", "Test");
```

https://www.javatpoint.com/java-string-format

https://docs.oracle.com/en/java/javase/19/docs/api/java.base/java/util/Formatter.html

Exercises

Concatenate two Strings

Declare and implement a functions which takes two Strings as arguments and returns one String, constructed by concatenating the first String with the second String and adding a Comma and Space between the two.

```
concat("String1","String2") -> "String1, String2"
```

Find the position of a substring

Declare and implement a function which takes two Strings as arguments and returns the index of the position in the first String at which the second matched. Retrun -1 if no match was found.

```
      0 1 2 3 4 5 6 7 8 9 10 11 12 13
find("T h i s   i s   a   T  e  s  t", "Test") -> 10
                         "T  e  s  t"
                          ^
                      Index: 10
```